

1. Assume you have 100 g of each of the compounds below. Name each of the compounds and then determine the number of moles of each. Be sure to write down all the important information, the mathematical formula and then perform the necessary calculation.

Rb₂O CaS FeBr₂ Co₂O₃ CrO₃ Cr₂O₃ K₂Cr₂O₇ ZnCl₂

2. Assume you have 2.65 moles of each of the compounds listed below. Name each of the compounds and then determine the mass of each. As before, be sure to write down all important info.....

Al₂O₃ CsF Ca₃(PO₄)₂ Al₂(SO₄)₃ Pb(NO₃)₂ NI₃ N₂F₄ SiF₄

3. How many hydrogen atoms are there in 1 mole of C₆H₁₂O₆? In 3 moles of CH₄? In 4 moles of H₃PO₄?
4. Assume you have 25 g of each of the compounds listed below. Determine their formulae and then the number of oxygen atoms present in the 25 g sample. As always, be sure to....

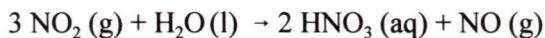
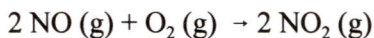
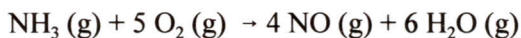
Nitrogen monoxide
Potassium hypochlorite
Iron(III) periodate

Sodium carbonate
Ammonium nitrate
Magnesium phosphate

Sodium hydrogen carbonate
Cesium bromate
Vanadium(V) oxide

5. Ammonium dichromate, (NH₄)₂Cr₂O₇, decomposes into chromium(III) oxide, nitrogen and water when heated.
- Write the balanced chemical equation for this reaction.
 - Determine the masses of each of the products when 10.8 g of ammonium dichromate is heated. Follow the set-up outlined to you in yesterday's lesson.
 - Determine the number of water molecules present after the substance is decomposed.
 - Determine the number of chromium atoms present after the substance is decomposed.
6. Determine the amount of each of the reactants necessary to produce 100 g of the precipitate, if any, in each of the following double displacement reactions:
- Ammonium sulfate mixed with barium nitrate
 - Lead(II) nitrate mixed with sodium chloride
 - Sodium phosphate mixed with potassium nitrate
 - Sodium bromide mixed with potassium chloride
 - Copper(II) chloride mixed with sodium hydroxide
7. Have you truly mastered this section of stoichiometry?

Nitric acid, HNO₃, is commercially prepared from ammonia according to this three step synthesis:



What minimum mass of ammonia is required to produce 1 000 000 kg, that is 1.0×10^9 g of HNO₃?